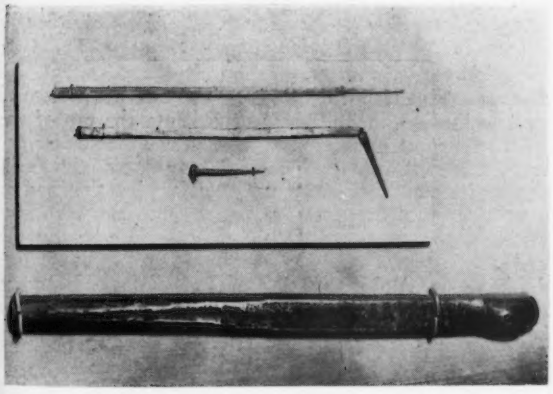
The Chronicle
of the Early American Industries Association, Inc.
Volume XIII June, 1960 Number 2

NAIL MAKING DEVICES

We have received, in response to the article, THE FRENCH METHOD OF MAKING NAILS, *in the December, 1959, number 4, issue of the Chronicle, some interesting tools used for making nails. We feel these will add to our knowledge of this craft.*

NAIL-MAKING DEVICE AT THE DELAWARE STATE MUSEUM.

LEON DEVALINGER, JR.



The device shown above is on display in the Delaware State Museum in Dover. The tool is 12-½ inches long of which the tapered handle part is about six inches. Through the middle of the tool it is ¾ of an inch square and the header end is one inch thick. The tool was not placed in a vice but held across an anvil when used. The non-heading end was used as a handle.

At the top of the display is an iron bar drawn to the size for making nails and already pointed at one end. The next piece is a similar bar partially cut the length of the nail and below it is the finished headed nail. At the bottom is the nail-header into which the wrought iron nail was placed. The blacksmith or nail-maker then rounded a head by peening the part of the metal protruding through the nail-header.

NAILERS' ANVILS AT OLD STURBRIDGE VILLAGE

KENNETH M. WILSON

Among the collection of craft tools at Old Sturbridge Village are three nailers' anvils. Each is different in form and, more important, each varies from the others in the extent of facilities available for the task of producing nails. Even a brief study indicates limitations in each and gives rise to several questions:

How were these tools used? Who used them? Were they used solely or in part by blacksmiths, or did farmer-artisans employ them in the winter months to produce an extra "cash crop" in the form of saleable nails? Was there in New England, as in Britain, a specialized craft of nail-making?

Some of these questions are answered in part by information already known about these specific nail anvils. Aided by this material and the accompanying photographs, perhaps some of our readers will be stimulated to contribute further knowledge about such tools.

Fig. 1—Nailer's anvil and bench, probably from a blacksmith's shop in North Woodstock, Conn. Total height 29½"; total length 33".

The combined nailer's anvil and bench, Figs. 1 and 2, is 33″ long and 29½″ high, overall. The anvil appears to be formed from a piece of steel folded over and welded to a shaft of iron. The shaft is set into the upper end of an oak post reinforced by an iron ferrule or collar, ¼″ thick and 1″ wide. The anvil lacks both a hole, or series of holes, for heading nails, and a hardy for cutting off nail rod. These factors, plus the awkardness of obtaining a hot nail rod from a forge or fire while seated, point to a limited use for this particular tool. Specifically, they seem to limit its use to pointing new nails or straightening old ones while cold.

Fig. 2—Detail of nailer's bench and anvil shown in Fig. 1.

This hypothesis has some support. Conversation with Mr. Ashley Hibbard, an eighty year old retired blacksmith from North Woodstock, Conn., revealed that as a boy he had used this particular nailers' bench (given to Old Sturbridge Village two years ago by another resident of the same town) in a blacksmith shop located in North Woodstock. On it he had both pointed cold new horseshoe nails and straightened bent ones.

The age of this anvil is indeterminate, but circular saw marks on the underside of the bench and cut-stamped headed nails used in its construction indicate a post-1840 period. Quantities of horseshoe nails have been driven into the edges of the bench as well as between the anvil and the iron ferrule around the top of the post. The legs and post appear to be of oak and the bench, feet and box divided into two sections — of pine.

The next illustration, Fig. 3, shows a somewhat simpler form of nailers' anvil. Its base, of oak or chestnut, is 25″ high, with the anvil extending 5⅜″ above,

Fig. 3—Nailer's anvil probably from an unknown New England locality. The base, of oak or chestnut, is 25″ high; overall height 30 3/8″.

making a total height of 30⅜″. The anvil is a piece of steel welded to an iron shaft driven into the top of the wooden support reinforced by a ⅛″ thick iron collar, 2″ wide. As shown by the hole in the top face of the anvil, this device could have been used for forming the head of a rather large nail as well as for pointing nails. No provision is made for cutting off nail rod. Apparently the nail-maker stood at this anvil to do his work. But where did he use it? And why is there no cut-off device? Or was the hole in the anvil, about ¼″ in diameter, utilized to hold a small hardy for cutting off purposes, as well as for forming the heads of nails or small bolts? And what, too, was the source of his heat? If a forge, why was a special nailer's anvil necessary, when a normal-sized anvil would undoubtedly have been on hand? Was it used only by an apprentice as an economy measure to eliminate the necessity of purchasing a second anvil for the shop? Or was this nailer's anvil also used only for straightening both the shanks and heads of nails? Unfortunately, no history accompanies this tool.

The third nailer's anvil shown, Figs. 4 and 5, is somewhat more unusual than the previous two. Its body is of stone bound around the top edge by a segment of a used iron tire ¼″ thick and 1¼″ wide. Into the top of the stone are set a small anvil with a cap of steel welded to an iron shank and a small hardy for cutting off purposes. The stone is 31″ high, the anvil 3″ high. Originally six or eight inches of the stone was set in the ground, thus making it a few inches lower in working height than the other two illustrated, if we assume that the stone has not been broken off.

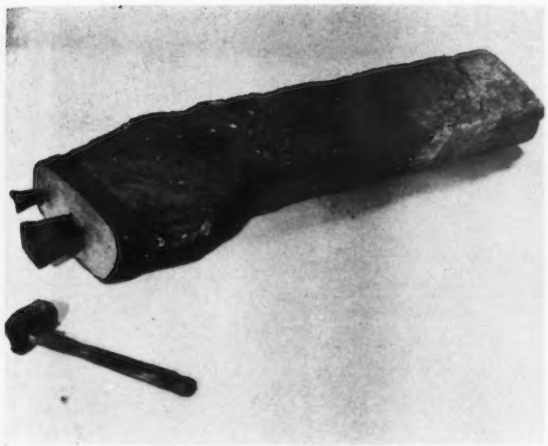


Fig. 4—Nailer's anvil and hammer from a blacksmith's shop in Stratford, Conn. The anvil and hardy are set in a stone support 31" in overall length, reinforced around the top by a 1" wide band of iron.

Although this anvil is somewhat more complete than the previous ones illustrated, it lacks the means for heading nails. Was an individual nail or bolt header used to perform this operation — a tool which could easily have been separated from the anvil and become lost? Possibly this was the case. If so, we are more fortunate with respect to the hammer pictured, for it accompanied the anvil when it was acquired from Mr. and Mrs. Irving F. Webb of Stratford, Conn., according to Mrs. Webb, this anvil and hammer were used in her grandfather's or great-grandfather's blacksmith shop in Stratford, but no further history about it is available at present.

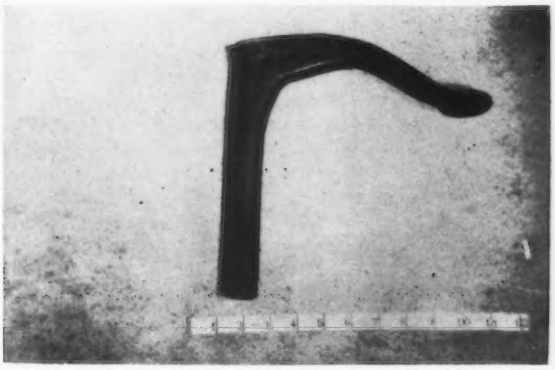
Fig. 5—Detail of Fig. 4. The hole in the iron reinforcing band probably indicates this was a second use for this piece of iron, originally being used as a tire for a light wagon or carriage.

Editors' note: Charles Tomlinson, in his *Cyclopaedia of Useful Arts & Manufactures*, London, c 1860, describes a similar nail-header and anvil as those shown in

(Continued on page 25)

THE HOLDFAST AND COMBINATION TOOL

LAWRENCE S. COOKE



Holdfast.

Perhaps one of the most elusive items to the early tool collector — yet one that was once in common use — is the HOLDFAST. Illustrated in Diderot's L'Encyclopedie, Moxon's "Mechanick Exercises" and Mercer's "Ancient Carpenters' Tools," it nevertheless appears in very few museums and private collections.

It was the forerunner of the bench vice and was driven into a loose fitting hole in a bench top to clamp the work. There is some reference that it was also used in the side of the bench to hold work for mortising, carving, etc.

Consisting of merely one crude forging that required no close tolerances, it could easily be made by any blacksmith.

It is of interest that one woodworking supply house in Boston today offers a modern version of the HOLDFAST which, however, employes a screw to apply pressure to the arm rather than the use of a mallet or hammer.

Combination Tool.

The above photograph shows a combination tool from an old up and down saw mill which may be unique.

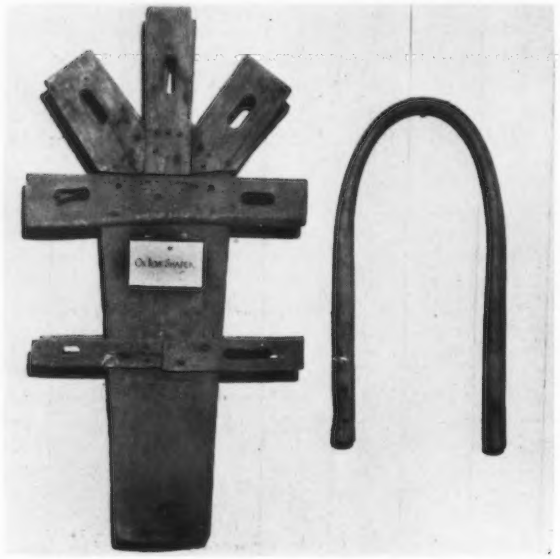
Approximately 15 inches long, it has on one end the familiar slotted type of saw "wrest" or set while the other end has been forged to provide a box wrench for clamping the blade on an old up and down saw. The slot was obviously designed for a blade at least 1/8 inch thick.

The Chronicle

OX BOW SHAPER

SUBMITTED BY JAMES A. KEILLOR

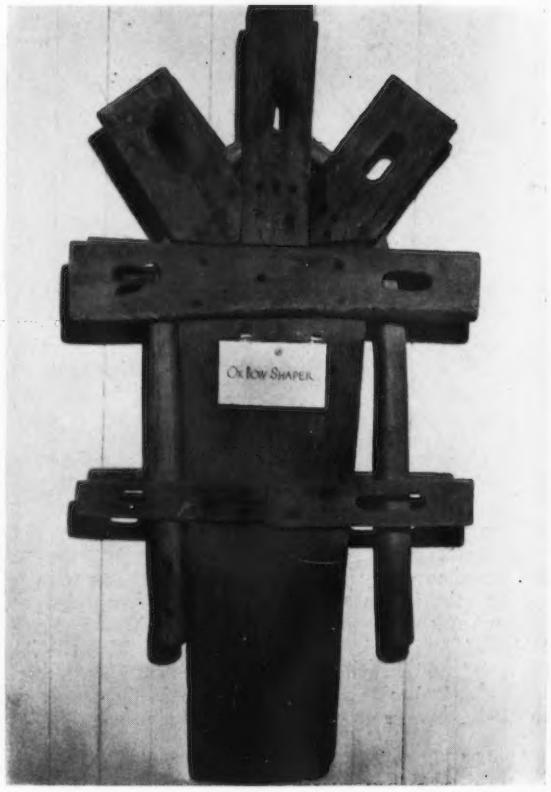
Mr. Keillor picked up this interesting ox bow shaper in Sheffield, Mass. and now has it in his collection. The question has been raised as to how it was used in shaping an ox bow. Mr. Edward Durell suggests that when a farmer made an ox bow using this device he would procure green hickory so that it could be easily bent. The hickory would be first cut, drilled, and shaped longitudinally before it was placed in the device to bend it. The two ends were bent by hand around the form and tied in place. Next, tapered wooden wedges were inserted in



The bending device and completed ox bow.

the seven holes and gradually driven home until the bow was securely placed against the U shaped form and then left to dry so that it would retain the shape. If it was made in a shop, dry wood could have been used and that portion of the wood where the bend was to be made would be well steamed to soften it before starting the bending operation which would then be the same as described above.

Mr. J. Didsbury's suggestion was the same concerning the wood obtained. However, he takes exception to Mr. Durell's method. Instead of first bending the ox bow around the device, tying it, and then placing in the wedges, he feels that one side of the bow would be placed along side of the device and the first bottom wedge inserted, thus holding it securely while the second wedge was placed in the next hole on the same side. Then the process of bending would be started. As the first bend was made, a wedge was inserted; as the second bend was made, a wedge was inserted; etc., until the bend was completed and the opposite end of the bow was against the opposite side where the operation began. This method



The bent ox bow in the device.

of holding one side by the bottom and next wedge, would hold this side of the bow securely and afford better and easier leverage to properly perform the bending.

Mr. Durell's reply to Mr. Didsbury is interesting: "Either the method I have described or that described by Mr. Didsbury could be used. However, my experience in bending wood would lead me to believe there would be more fracturing with Mr. Didsbury's method because you have to stretch one side very slowly if you don't want it splintered. Perhaps I did not explain clearly that in the initial bending operation when you tied down the two ends they might be as much as 8 inches away from the form itself and that the thongs were gradually shortened as the wedges were applied.

The device from top to bottom is 3 feet. The bottom measurers 6½ inches across and the top center cross piece measures 10½ inches between holes. The block is 3¾ inches thick.

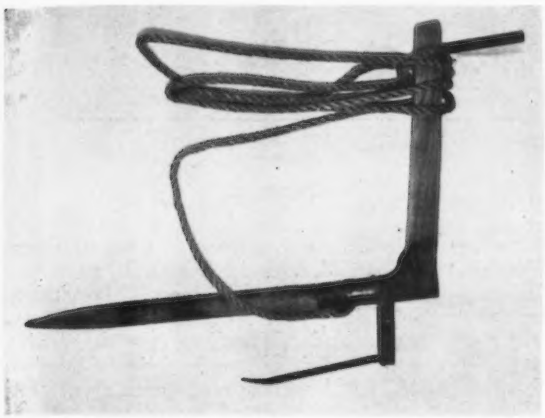
Have any of our members ever seen this device actually used? We would be interested in having your comments.

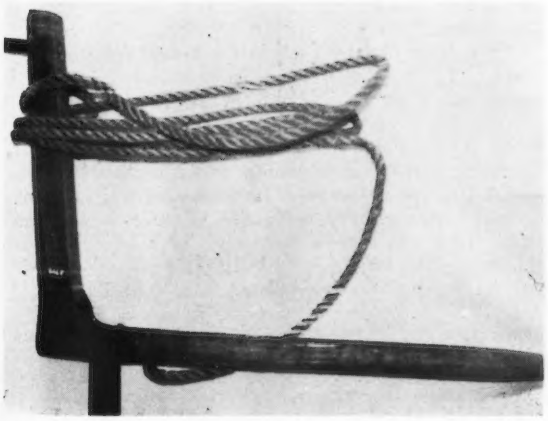
Early American Industries
CORN-SHOCK BINDER

JAMES A. KEILLOR

Driving through Virginia on the way to the EAIA meeting at Williamsburg last fall, Mr. Keillor and Edward Durell found this interesting device in a small town. The dealer told them it was used for tying up hay. However, they found the device illustrated and described as a corn-shock binder in the *Annual Register of Rural Affairs, 1858 — Albany, New York.* There is a slight difference in the method by which the rope is fastened, but it is practically the same. The device measures 22 by 14 inches.

The device is described under the heading "Rural





Economy" "Corn Shocks." "A great deal of good corn-fodder is spoiled, because the shocks are not well bound together, and storms soon throw them down. Large shocks of the husked stalks may be firmly secured, by first bringing them firmly together with a rope, attached to a simple contrivance shown in the annexed figure. A small piece of board, A, has three holes bored through it; and a sharp, round, and tapering stick, B, has a crank attached. One end of a ten-foot rope, is then passed through one hole and fastened to the crank; the board is placed against the shock, the sharp stick thrust through

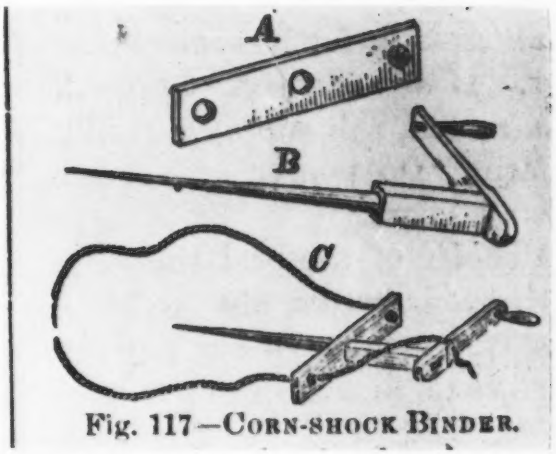


Fig. 117—CORN-SHOCK BINDER.

Annual Register of Rural Affairs, 1858 — Albany, New York.

into the shock, and the rope passed around the shock, and hooked on an iron hook at the other hole, as shown in C. A few turns winds up the rope, binding the whole closely together, when a band is placed around, and the rope unhooked for the next."

CARRIAGE COLLECTOR'S ASSOCIATION

A group of people interested in the preservation, exhibition and driving of horse drawn vehicles met in New York on January 28th to promote a national association and plan for a spring conference at Stoney Brook June 16, 17, 18, 1960.

Pro-Tem officers selected were: Mr. Ward Melville, President; Mrs. Electra Webb, Vice-President; Mr. J. Pabst, Vice-President; Mr. Wesley Jung, Treasurer; and Mrs. Jane des Grange, Secretary.

The Early American Industries Association welcomes this newly formed group into the growing family of those interested in preserving the heritage of our ancestors. Our members who might be interested in obtaining further details may write to Mrs. Jane des Grange, Director of the Suffolk Museum & Carriage House, Stoney Brook, Long Island, New York.

We hope to carry in the next issue of the Chronicle an account of their first meeting.

The Chronicle

A HOLSTER FOR A WHETSTONE

FRED C. SABIN

Lacking a better name I have called the three illustrated items, a holster for a whetstone. The Germans called the horn ones, a *cow horn* or *koompf*. The wooden one is unnamed. Little can be found from available literature concerning the whetstone or its holder.

The wooden holster, figure one, is 17 inches long by 3½ inches at the top. The cavity is 5½ deep by 2 inches. The handle, by which it is affixed to the worker's belt or girdle, is gracefully carved as a part of the holster. The handles on the cow horns, figure two, is of wrought iron and is fixed with two wrought iron rivets. The horn ones measure 9 inches by 2½ inches with a cavity of about the same dimensions.

Figure 1.

The wooden holster was brought to this country, about 1880, by a German and given to me by his son, a man of 70 years. The cow horns could have come from Europe or from the Pennsylvania Germans.

The following information was obtained from *Pennsylvania Agriculture and Country Life 1640 to 1840,* by Stevenson Whitcomb Fletcher. He wrote: "Grass was cut with a scythe till after 1840. There were two kinds of scythes, English and German or Dutch. The blade of the English sycthe was of hard steel and was sharpened on a grindstone and with a whetstone. The blade of the German scythe was shorter and broader; this was sharpened by pounding on a miniature anvil; or dengled-dengled on a denglestock, then wheted. The anvil was about four inches long by one inch thick. It

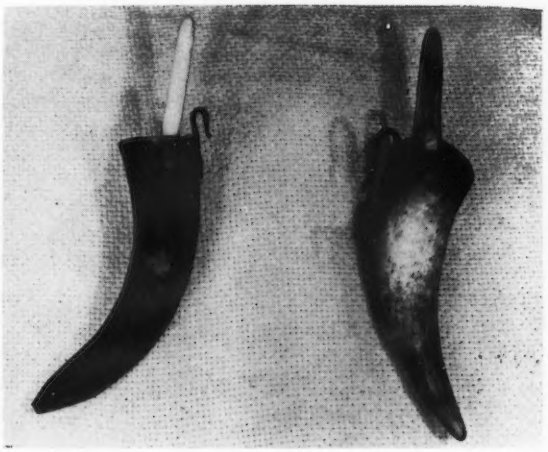


Figure 2.

was taken to the field and fastened to a log or stump. The mower also carried, hooked to his girdle, an ox horn half full of water. This was his *"koompf"* in which he kept his whetstone damp for most effective use in temporarily sharpening the blade. The German scythe was better suited than the English for mowing irrigated meadows of native grasses, which were common until about 1810. When these were supplemented by upland fields of timothy and red clover, an English scythe came into general use. An acre was considered a good days mowing for one man.

The story of farm tools in the *Young Farmers Club Booklet No.* 24, by H. A. Beecham and John W. J. Higgs, published in England in 1951, relates further information: "To sharpen the blade of his scythe, the mower must have a scythe stone to hand. This is made of sandstone or of carborundum, and is variously called a *hone, brittle-bat* or *rubber*. Its formation was sometimes made of hard wood covered with a mixture of grease and sand. This was carried in a cow's horn by the mower and smeared on when required. In some cases the wooden stick had a coating of granulated emery glued to its surface. This type of sharpener was known as a *strike* or *ripper stick* and is still used in parts of Wales today.

INFORMATION WANTED!

In reading through eighteenth century York County records of Virginia, we encountered in the inventor of Henry Bowcock, 1730, a tavern owner of Williamsburg, "three wax candle engines" valued at five shillings. Was this actually some sort of mechanical device? Have any of our members any knowledge as to what this might be?

Do any of our members have any references to the fly shuttle loom being used in the colonies prior to the revolution? If so, the Editor urgently needs this information.

The Chronicle

Early American
Industries Association, Inc.

The purpose of the association is to encourage the study and better understanding of early American industry, in the home, in the shop, on the farm, and on the sea, and especially to discover, identify, classify, preserve and exhibit obsolete tools, implements, utensils, instruments, vehicles, appliances and mechanical devices used by American craftsmen, farmers, housewives, mariners, professional men, and other workers.

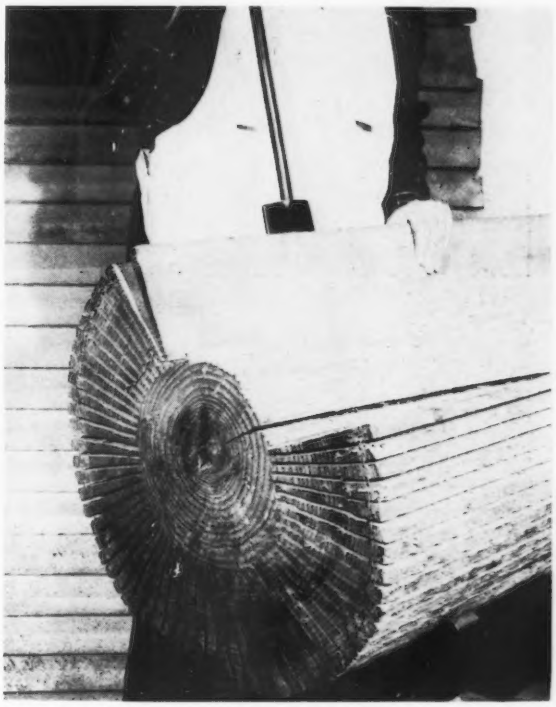
Communications regarding the contents of *The Chronicle* and back issues should be addressed to the Editors; suggestions for members to John P. Fox; all other matters to the President. Address as here given.

DUES

The annual dues are payable on January 1st and are $5.00. The *Chronicle* is published quarterly and is sent to all members without additional charge. Printed on the press of The *Virginia* Gazette, founded 1736, *Williamsburg, Virginia.*

SPRING MEETING
SHELBURNE MUSEUM

Members by now have received advance notice of the meeting June 17, 18, and 19, at the Shelburne Museum, Shelburne, Vermont. This advance notice contains an excellent list of accommodations available to members and the fine program prepared by the staff of the museum. We are certain that this will prove an outstanding meeting and we trust we will see you there.



Making Clapboards.

Members will be afforded the opportunity to see some 2000 woodworking tools at the Museum. Mr. Frank Wildung, author of *Woodworking Tools at the Shelburne Museum*, plans to devote considerable time to "talking about" these tools. The following account *How Clapboards Were Made* is taken from his fine informative illustrated book.

"Our early sawn clapboards were water power sawn by a circular saw, having a small diameter, and were mounted on a carriage called a "rouser." This carriage had two centers, similar to the centers on a lathe. The live center being fitted with an index head.

A four foot length of log, about 24" in diameter or larger, mounted between these centers was barked and roughly rounded with a gouge before being cut. The carriage was then moved into the saw and a saw cut about 6" deep was made the full length of the log. The log was returned and rotated. The circumference of the log moving about 5/8th of an inch, thus giving the wide edge of the clapboard about 5/8th of an inch thickness. As can

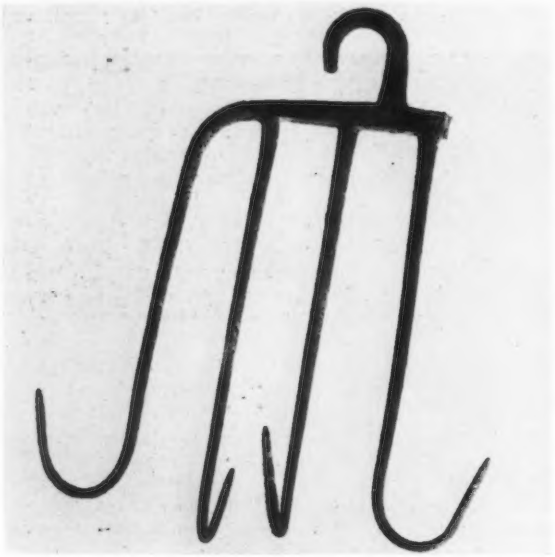
(Continued on page 28)

The Chronicle

WHATSIT?

FROM ELMER D. KEITH COLLECTION

The following Whatsit photographs were sent for identification by Mr. Elmer D. Keith, Pond Hill Farm, North Haven, Connecticut, to Mr. Edward Durell, who then forwarded them to Mr. Minor J. Cooper, our Whatsit Chairman. We submit their comments:



Item 1.

Item #1. Mr. *Keith*: Country, improvisation from a broken pitchfork. To hang foods in a cool well? Mr. *Durell*: I think your guess that the hook-like arrangement was improvised from a six-tine manure fork which looks to me to have been factory made. It's what I call a "make-do" and they are very interesting. It seems to me, however, that if the meat were to be hung in a well that the shank of the manure fork would have been bent into an eye rather than into a U. Mr. *Cooper*: Meat or Game hanger, improvised from a broken, six-tine, factory made manure fork. To be hung on a peg in a ceiling beam, or from an iron rod across the well or spring. The position of the hooks of the tines would accommodate fairly sizeable chunks of meat. If the shank had been formed into a D, the device would also be useful as a grapple, but the hook makes it unsafe for this purpose. These "make-do" articles tell a fascinating story of the frugality of our ancestors, a practice that is rapidly becoming obsolete.

Item #2. Mr. *Keith*: Made from a woolen fabric which seems 17th century (fustian?), 14 inches long. Even the long handle (?) or tassel (?) is hollow — about wide enough for a thin finger and is 5 inches long. Note the holes for a draw-string along the wider end. The finger end is open, though very narrow. It fits fairly well over a modern wine bottle, though its taper seems unnecessary. The narrow end will take the long rack of a bottle. Mr. *Durell*: I have never seen anything like this. Perhaps Mr. Cooper has. Mr. *Cooper*: This looks to me very much like what I have known as a "stocking cap."

Item 2.

A drawstring would allow it to be snugly fastened to the head. Well into the 1900's knitted-by-hand stockings were still being made in the home. When mending was no longer possible, the tops were often converted into stocking caps by cutting them to the desired length, tying one end, and often adding a tassel, sometimes long enough to hang to the shoulders. I wore a machine made one about the time of the first World War. Didn't the French Canadian voyageurs wear something like this?

Item 3.

Item #3. Mr. *Keith*: This instrument was evidently fastened into a wooden pole. It has been identified by a very intelligent Hungarian friend as something that every owner of a thatched cottage had in his native village, to use in case of fire to pry and pull burning thatch off the roof. Americans usually conjecture that it was used when floating logs down a river. But why the 18th century twist in it? Is this heavy enough for a log-jam? Overall length — 14¼ inches. Mr. *Durell*: Could have been used for handling logs in the pond or mill race or for handling ice. The bent shank would indicate that this was driven into a pole and then the shank wired to the

pole or fastened with a wire collar. Mr. *Cooper*: Wrought iron hooked pike. Very unusual with twisted point. I can think of no purpose for this outside of decoration. As Mr. Durell suggests the hooked shank could be driven into the pole handle, and tightly bound to it with wire, strong cord, or sinew. This hooked shank type would be practical in remote areas where tools to bore a hole in the handle were not already available, and poles were often broken when handling heavy logs and cakes of ice. The hook is, of course, essential to keep the pike from being pulled off the pole. Common pike shanks have a hole near the point through which a nail or pin was inserted after the pike was driven snugly into the hole in the pole. The use you suggest is also practical.

Item 4.

Item #4. Mr. *Keith*: Heavy wooden scoop, with round depression just off center in the bowl (¼"). Overall length 17¼ inches and scooped section 7½ by 4⅞ inches. Mr. *Durell*: Without seeing this and smelling it, I can't give a very good guess. If it wasn't so large I think it might have been used as a soft soap receptacle. Mr. *Cooper*: Soft soap scoop, called by many collectors and dealers a "soft soap box." Usually in oval shape, most are rectangular with straight sides. This is an unusually large one. One at the Farmers' Museum is about 14" long, and I have a little one with chip carved handle 6¾" long. The round depression appears to have been made with an auger bit of the open-spiral, cylinder, or shell type. It was a common practice when excavating wood for mortises, hollowing, and inletting, to bore many holes with an auger bit to the required depth, then finish with a chisel. Often if a stop on the auger were not used one or more holes would be bored too deep, such as this one. In more recent years a Forstner bit was used, particularly when inletting gun locks, and to make deeper holes for chair rungs than could be made with a screw pointed bit.

Item #5: Mr. *Keith*: The graining is vivid and rather exciting. The center work space is covered with leather which slopes off to two small troughs at the right, apparently for the tiny wire nails a cobbler used. In the rack at the back are eight open boxes, and a narrow trough in front of them, also evidently for very small nails. Then five larger boxes (drawers) with brass rings (flush ring-pulls) to pen them, and seven drawers in the case. The post in the foreground has an opening in the top. Three drawers have different dates in pencil, all in the eighteen fifties. The seat did not come with it, but fits fairly well. It was a loom seat. Mr. *Durell*: This is certainly a very interesting work bench and Mr.

Item 5.

Cooper can give you a clue. If it was used by a cobbler I would have thought that there would have been some place to hold the last in place and if used by a saddler there would have been a clamp, incorporated in the bench. Mr. *Cooper*: This is a professional shoemaker's bench. I have seen several of this type, all of which came from the New England area. Whether or not this type of bench is typical of this area only, I cannot say. It would be called a "standing" rather than a "sitting" bench such as the low type commonly seen. It would be interesting to know whether the craftsmen who used these benches were piece workers who applied soles and heels only. In the coastal towns of Massachusetts, according to a report I read, there were many little "shops" behind the houses where the men would do this piece work. A "stake" (shoe last mounted on a post having slight taper at its lower end) was inserted in the hole in the heavy bench leg. Because it was often wedged in tightly by the pounding of the hammer, it was ejected by shoving a bar up through the opening in the lower part of the leg. (Editors' note: In the shoemaker's shop at Colonial Williamsburg there is a bench of this type. We have heard the story that these were manufactured by a factory in Massachusetts during the mid-nineteenth century.)

Nail-making Devices

(Continued from page 19)

the above articles. The anvil, as a "Small cube of steel", and is used as follows: "The nailer begins his work by putting into the fire the ends of three or four nail-rods, and works the bellows until they are at the proper heat. He then takes one of the rods, and resting it on the anvil, draws out the nail by means of a few skillful blows. The end, thus forged, is now cut off by means of a chisel, or *hackiron* (hardy), a short distance from the cutting edge of which is a stop or check for determining the length of the nail." To make the head: "While the rod is heating

(Continued on page 27)

The Chronicle

The Sixth Sense of the Craftsman

PART II. THE BLACKSMITH

BY RALPH HODGKINSON

The craftsman's sixth sense is capably, if briefly, appreciated by Lawrence C. Roth in his book "The Colonial Printer." Speaking of those who made paper by hand he says, "To take up the pulp with the mould in the right quantity, to drain it evenly by calculated movements, to discharge the thin saturated layer of pulp upon a felt pad at exactly the right moment were processes which demanded something more than mere manual dexterity."

This "something more" played an even greater part in the wonders the blacksmith wrought with iron. His iron came to him, for example, in much cruder form than today's suppliers deliver, and with no guaranteed analysis. In fact, sometimes it was no doubt little better than what we would call good grade iron ore. Even when somewhat refined, its composition must have varied widely from piece to piece. Now, it is well known that just a few tenths of a percent difference in the amount of carbon or other impurities present will change the properties of iron markedly. Even so, the blacksmith worthy of the name worked successfully with such unpredictable material. Unaided by scientific equipment or knowledge he worked *with* the metal, making use of the properties it had.

Remember, please, that he had no pyrometer with which to measure high temperatures, no furnace with accurate temperature control. Yet the whole character of iron (and even more so of steel) changes critically with temperature. Here he used eyes like yours and mine, but wonderfully sensitive to the whole range of red color. There was one, and only one shade of red which was just right for each operation. He knew that shade. There was only one instant at which the irons in his forge were just right for welding. Another few seconds in the fire, a pull or two extra on the bellows and those fleeting, semi-liquid surfaces for good welding would be burned into uselessness. Not only did he recognize this brief instant of weldability. He "struck while the iron was hot" at exactly the right time, in precisely the right place and direction to unite the two or more pieces of iron, which he had swiftly positioned on his anvil, into a single unit of the shape he desired.

If asked to give the coefficient of expansion of iron, this master craftsman might have seemed stupid indeed to a modern metallurgist. How different he must have appeared, though, to those who brought him their wooden cart or carriage wheels to be "tyred." With only his crude measuring wheel to help him, he would cut a length of iron, bend it full circle and weld its ends. Heating the tire over a hemlock bark fire, he would bang it occasionally with his ever-present hammer. There came a time when the ringing sound this made changed in character. This was the moment to slide the expanded tire over the wheel and douse it with water. Then, over the hiss of water on hot iron, came those creaking sounds which meant that the shoulders of tightly fitted spoke tenons are being irresistably drawn snug against both hub and felloe mortises — but *not* the crackle of breaking wood which would occur if the tire had been cut even *slightly* shorter!

Back in the darkness around his forge fire, the blacksmith's eyes and instincts brought about, as a matter of routine, another wonder. Steel, which he could quickly distinguish from iron and which he could *make* from iron when he had to, offered marvelous opportunities to use his special skills and powers. Here was a medium which he could render as hard and brittle as glass, or as soft and ductile as iron. Better still, he could create each of these states in different parts of the same piece of metal, or almost any intermediate combination of hardness and toughness he desired. Hence the hard, longlasting cutting edge of the well-made cold chisel, supported from within and behind by the shock absorbing toughness of its core and shank. Hence also the hard, wear-resisting surface and tough interior of the cockhead, that vital small piece of metal on which the heavy running stone of the grist mill rests and rotates.

This magic with steel, which he called "tempering" even as we do today, called for expert timing and judgment plus something more. He could not have known the complex physical changes taking place within the metal, but he did know what to do, and sensed when to do it to make best use of these changes. His eyes told him the correct redness at which to thrust the piece into the chilling water, but some more occult power told him how deep and how long to hold it there. His hands formed the shiny surface on the critical part which he must watch as the heat flowed through it from the unquenched portions. His eyes watched the beautiful colors move along this surface, but these were not oxides to him. He just knew the full meaning of that old couplet, "Twixt the straw color and the blue, the steel is good, the temper true," and as the color he wanted ran to the point at which he wanted it, he quenched the whole piece once and for all, freezing in it the needed characteristics.

Let's look again at the seemingly coarse tools of the blacksmith, the one craftsman who could make his own tools. Then let us take another look at the beautiful, often even delicate wrought iron treasures he has left for us. Realizing that he was of necessity his own strength of materials expert, designer, rate setter, bookkeeper, and salesman, we may better appreciate the truth that "something more than mere manual dexterity" lay behind his superior craftsmanship.

NOTE ON THIS ISSUE

The editors are gratified at the number of contributions received from members in this issue. We have utilized all but one such article in this issue and that one will appear in the next issue. This issue has six articles, all short and to the point concerning some specific tool or implement in our members' collections. These articles are all interesting and reflect the variety of information available in our Association. This issue is truly an E.A.I.A. issue and is a tribute to Edward Durell whose recent efforts in behalf of the *Chronicle* are bearing fruit. Please keep these articles coming as they definitely help place the *Chronicle* among historical and technical publications which have great value to the student of American history.

Some Interesting Washing Machines

The inventiveness of man has not only been confined to making life easier for himself but has also been applied to making life easier for his womenfolk. He has always known that a woman's work is never done! And any labor saving device he could create for her he knew would ease a little more her many daily chores. The washing machine has played a prominent part in women's lives and modern laundries have by no means lessened to any great degree this common household task.

Washing Machine in John Volgar House, Old Salem.

Members of the EAIA who visited Old Salem, Winston-Salem, North Carolina, for the fall meeting in 1957 will recall the washing machine in the John Vogler House pictured in figure one. Mr. Frank P. Albright of the Wachovia Museum informs us that it was given to the museum by the Fries family, who trace their ancestors back to the earliest days of Old Salem. It dates in the first half of the nineteenth century. The machine is 4 feet long and 3 feet high. It is operated with a rocking motion of the double handle and rotor. The rotor (if that is what it was called) is completely round so that by turning it a bit further now and then, the clothes are eventually pulled through the machine from the front compartment to the rear one, rubbing every part of them. The round bars on the rotor are fastened rigid but those of the rack below are free to rotate so that they squeeze the water through the clothes rather than rub the clothes. The U shaped handle resting over the axles of the rotor and resting on the rim of the tank is hinged so that it can be raised and the rotor removed. The rack is also loose and can be removed for cleaning, thus leaving the tank unimpeded. A wooden plug stops a hole for draining in the far side of the tank. There is no indication that the machine was ever painted. The wood is pine for the tank, dovetailed together, white oak for the ribs and rollers and maple for the axle.

Figure two shows the washing machine on display at the Shaker Museum, Old Chatham, New York. Many of our members will recall seeing this during the spring regional meeting in 1959. Mr. Robert F. W. Meader, of the Museum, informs us that it was patented, in a new and improved form, in 1877 from the original design

Power Washing Machine, The Shaker Museum.

of 1858. The machine is believed to have been made about 1860 at Mt. Lebanon, New York and then sent to Canterbury, where it was in use for some 90 years without major attention. It was powered first by water, and second by steam. There are three separate tubs, each with its own faucets and drain; dashers moved from end to end of the machine and were connected to a longitudinal crank-driven plank. It won the Gold Medal at the Philadelphia Exposition of 1876.

Nail-making Devices

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the nailer forms the heads of those cut off by means of a *bore*, a piece of strong iron, 10 or 12 inches long, with a steel knob at each end perforated to the size of the shank or collar of the nail, and countersunk so as to correspond with the head. Taking up the nail, still red-hot with a pair of pliers, and putting it into the bore, point down wards, the nailer strikes it upon the projecting end, which moulds it to the shape of the perforation."

The many sources on early manufacturing in the New England Colonies clearly indicate the making of nails as an extensive business. Fisher Ames, in a speech before Congress (c. 1790), stated that it was quite common for the country people of Massachusetts to erect small forges in their chimney corners and in the winter months, during the evenings when the weather prohibited any other type of work, made quantities of nails. Nehemian Bennett, in his description of the town of Middleboro, Massachusetts, written in 1793, wrote: "Nailing, or the business of making nails, is carried on largely in winters by the farmers and young men, who have little other business during that season of the Year." Weeden, in his *Economic and Social History of New England*, 1620-1789, writes that from 1731 the chief branch of the native iron works of the New England Colonies was the conversion of bars into nail-rods, at the slitting mills, and were used in domestic manufactur-

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CUCUMBER SLICER

Cucumber Slicer, c. 1830.

EAIA member Laurence A. Johnson received these pictures and information concerning this interesting cucumber slicer from Mr. H. Raymond Singleton, of the Sheffield City Museum, Sheffield, England where the item is on display. Mr. Singleton wrote that it dates from about 1830 and is made of Old Sheffield Plate. The cucumber is fixed to the spiked plate inside the cylinder and is fed forward by means of the long threaded rod as the handle carrying the cutter blade is turned. The position of the spiked plate can be adjusted by means of the two levers which grip the threaded rod. The cutter still works perfectly.

End view, cucumber slicer.

Mr. Singleton stated that although this gadget has appeared on television here (England), and that he has made extensive enquiries for many years he has never been able to trace another one of its kind, either in Old Sheffield Plate or anything else. He would be interested to hear of any similar cutter that any of our members have come across. (Editors Note: Any of our members who have seen such a gadget or have one, we would welcome pictures and information concerning it to print in the Chronicle.)

Spring Meeting

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be seen, the clapboard will thus taper throughout its width. This process was continued until the log rotated 360 degrees, the index head giving an accurate spacing for each cut. This particular log produced 75 clapboards.

To free the clapboards a special short broad-bladed chisel was used, as can be seen, to break loose the clapboard from the log. After the clapboards have been removed from the log, if the core was of sufficient diameter, it was again smoothed off with the gouge and the foregoing procedure repeated. This produced another set of narrower clapboards, these being approximately 4″ wide.

Since narrower clapboards did not have the sale value of the others, they were usually used in the locality where they were cut. Some of these clapboards can still be seen on some of the old New England homes and are still good after a 100 years of exposure to the weather, often times without paint."

Nail-making Devices

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ing. Small nails could be imported cheaper than they could be made, but ordinary nails and spikes were the common offwork of blacksmiths. Old diaries show many days were spent in making nails.

L. Bishop, in *A History of American Manufactures from 1608 to 1860,* informs us that in the county of Litchfield, Connecticut, in the late eighteenth century, the manufacturing of nails was carried on to a greater extent than in any part of the Union with the exception of Plymouth and Bristol counties in Massachusetts.

An informative account of nail-making in Essex County, Massachusetts, may be found in *Essex Antiquarian,* Vol. II, No. 5, Salem, Mass. 1901, by Sidney Perley, "The Manufacture of Nails in Essex County, Massachusetts."